

Approved For Release 2003/03/28 : CIA-RDP80R01731R003000260043-8

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628 FIFTH AVENUE  
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Executive Registry

ROOM 628

VANDERBILT 6-0674

October 22, 1951

Dear Mr. Dulles:

I am sending you herewith a copy of Dr. Haskins' address on Culture and Power in the Modern World, which shows that the author's interest is in both science and the humanities. He has written other books which point in precisely the same direction.

I am sending you under separate cover a copy of I Remember.

I look forward with pleasant anticipation to having you lunch with me when you have an opportunity here in New York. You can always reach me by telephoning my office. (Vanderbilt 6 - 0674)

Very sincerely yours,

Mr. Allen W. Dulles  
Central Intelligence Agency  
Washington 25, D. C.

*Abraham Flexner*

AF:ESB

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## CHAPTER LXII

### Culture and Power in the Modern World<sup>1</sup>

By CARYL P. HASKINS

*Director of the Haskins Laboratories; Research Professor,  
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ONE OF THE important aspects of the whole question of culture and power in the modern world, about which I think all of us are increasingly concerned, is the curious dichotomy of culture which modern technical advances have led us into. I think that all of us have been worried about the specter of a scientific materialistic culture outrunning our ability to control it or outrunning our ability to understand it - perhaps outrunning our ability to live with it.

All of us, regardless of our interests or our background, our professions or our station in life, have become acutely conscious that we are living in an atomic age. There is probably no one in the world who really understands what that phrase means today, or what it is likely to mean in the future. Yet to each of us it carries a more or less specific connotation according to his background. To some it means brilliant potentialities for the extensive development of atomic power in the future, bringing the blessings of great stores of controllable heat and mechanical energy to depauperate peoples destitute of supplies of coal or oil and desperately poor in forests, or reinforcing the future of our own country against that possibly distant day when such resources shall fail us, too. To others it means the initiation of a new and brilliant era of medical research, served by the radioactive isotope as tracer and by a host of forms of radiation for experimental use in cancer therapy.

<sup>1</sup>This paper was prepared as an address at the public meeting of the Seventh Conference on Science, Philosophy and Religion, held in Mandel Hall at the University of Chicago, September 10, 1946. The other speakers were Professor Lyman Bryson and Professor R. M. MacIver. Doctor Ernest C. Colwell, President of the University of Chicago, presided.

To others, again, it offers the opportunity, and indeed the desperate necessity, of evolving new forms of international cooperation, lest the potential blessing turn Frankenstein in irresponsible hands and set fire to the world. There are yet others to whom it means the frank threat of war in the not too distant future, when the agents of battle will be hosts of long range rockets with atomic warheads and the destruction of civilization and the spread of human suffering may be unimaginably greater than anything we have known before. And, finally, there are certainly those to whom it means the possibility that by long and patient development, by endless sacrifice of the more significant elements of living, by the reckless expenditure of energy and talent on a vast scale, a people or a group of peoples may so arm themselves that the mere threat of their armaments could satisfy ambitions for world power far vaster than any which history has known, could make possible the satisfaction of an almost inconceivable lust to conquer.

These hopes and fears range from the most sublime to the most devilish concepts, and they could hardly be more diverse in their specific substance. Yet they have two features in common, both of profound significance. They all deal with concepts of the power of man on a grander scale than man has ever dreamed before. Power of man to turn his inanimate world environment to his own use and benefit; power of man to combat the organic ailments with which he is assailed; power of man to unite the spirits and the will of man the world over; power of man to enslave men on a colossal scale—these are the visions which are conjured up by the words “atomic age.” The second common feature is that all these possibilities stem from scientific research—from scientific research closely coordinated and organized into a team so huge and so farreaching in both its physical and its mental aspects that in all the history of science there is no parallel. These are the features, then, that all men link in their thinking; the atomic age will be an age of unprecedented actual and potential power for man, and that power will be due to science, now at last appearing as a truly organized effort. Organized science will take its place now as the spearhead of power for good or for evil; it will be the arbiter of the fates of nations.

It can be argued that, like all novel ideas, this concept of the new role of science in the affairs of the world has been exaggerated and overstressed. The road to the development of atomic power may be a long

one, and it is uncertain what shape or what significance the final result may have. The application of radiations and nuclear particles to cancer therapy is not a new departure, but essentially only an extension of older technics. It is quite conceivable that satisfactory international understanding may be possible in the world without the sort of international agreements which we should like to see regarding atomic energy and which now seem to progress so slowly. And at the very worst, whatever the agent which annihilates him, no power in the world can do more than kill a man, and men have gladly died for principles since the beginning of time, so that those principles might survive the worst destruction that could be brought against him. It is surely as easy and as deceptive to exaggerate the hopes and the menace of an atomic age as it is perilous to ignore them.

This, however, is a relatively minor matter. There is a much more serious one which we must face, and it is the one on which I should like to lay particular emphasis. It is this constant association of the ideas of science and material power which the events of the past years, capped by Hiroshima and Nagasaki, have brought into such prominence in our common thinking. It is the concomitant dimming, too, of another pair of ideas with which we used to be more familiar. The twin concepts of science and culture—the single concept, indeed, of science as culture—springs much less readily to mind than it did a scant ten years ago. This trend, I believe, must be reversed in these coming years of peace. If it is not, there is grave danger, not only in a material but in a more deeply spiritual sense, for science itself and for our culture at large.

The histories of religion and of philosophy have amply demonstrated, with such clarity and force that none, I think, would deny it, that the power and the grandeur of both have lain in the quality of simple, selfless, sometimes even detached, efforts to revere, to help, and, above all, to understand. Over and over again, as new religions have arisen or new systems of philosophy have appeared, it has been demonstrated that the time when they accomplished the greatest fundamental advance was the time when they were relatively unknown, when at white heat they sought only to penetrate the veil around us, only to increase our understanding, only to comfort mankind or to widen its horizon. Almost invariably, in this period, the religion or the philosophy is the development of but a few—the humble product of a group of

zealous disciples who have no objective save to express and to convey that which they perceive or that which lies within them. Sometimes such systems of religion or of philosophy have died an early death, perishing with those who originated and believed in them. In other cases the ideas were so great that it fell to a later generation, equally devout and more numerous, but with a different mission, to organize the system of thought and to make its benefits available on a far wider scale than the early disciples would have wished to do or would have been able to accomplish. Such organization may serve a most useful purpose, as the great philosophies and the great religions amply attest. But there are few indeed who would deny that it is the early, the crude, the wholly selfless and the supremely creative period that is the truly great era of a philosophy or a religion, when the real cultural progress of mankind is achieved.

Mass organization of a religion or of a philosophy is at best an excellent and, indeed, a well nigh indispensable means of spreading the force and the comfort of its ideas among many men. But at worst—and all too commonly—it leads to the confusion of spiritual with temporal power, and to the ultimate identification of the religion or the philosophy with massive domination of the goods of earth and the fortunes of men. And, when this has happened, that particular philosophy of religion has become transformed from an agent of potentially great good to an inestimable menace to mankind, doubly diabolical because it wears a false cloak.

I think that the Conference has well demonstrated how common in their fundamental nature, in their basic objectives, and in their spiritual quality are science and philosophy and religion. Science, like its sister disciplines, is traditionally dedicated to the search for truth and the widening of knowledge, as its very name implies. Traditionally, too, its devotees have been selfless and dedicated men whose work brought to them such joy in and of itself that there was no need to seek for material resources or satisfactions beyond those necessary to maintain physical and mental health and competence. Its disciples in Medieval times, less fortunate than their predecessors of the Aegean, risked torture and death for the faith of their profession as truly as Christian martyrs. Poverty and social disgrace often enough attended the work of the crude physicist of Magdeburg or the crude astronomer of Italy or the alchemist of France and England, and it must have been a tower-

ing faith and compulsion indeed that kept him at his work. Single-minded and selfless devotion to the ideal of investigation kept the ailing Darwin ceaselessly at labor for twenty years at Down House and produced a theory of evolution, kept Pasteur at his research long after cerebral hemorrhages had nearly totally disabled him, and produced from that lifetime of work a theory of disease that has shaped all of medicine since his time. Single-minded and selfless devotion kept a destitute Pierre and Marie Curie at endlessly laborious and tedious chemical fractionations in a damp and leaky shed, until a new radioactive element of great importance was isolated and a major contribution was made to the spectacular evolution of our understanding of nuclear phenomena. Equal devotion to the same ideal kept unnumbered thousands of the predecessors and the colleagues of these men and women at their tasks, unknown to us today merely because they missed the accident of fame. The same faith and the same dedication sustain similar scientific explorers in their pioneer work today and will call others to the same benches tomorrow, in numbers greater than the world has ever known before. This is a faith and a creativeness worthy of the best in religion or in philosophy, and this is the essential aspect of science which we must not forget.

While science differs little from philosophy or religion in the objectives to which it is dedicated, it differs in the one important feature of method, and herein lie elements both of strength and of weakness which are emphasized today as they have never been before. Science has always committed itself to the discovery of truth primarily through factual observation. Science has its theories and its systems of philosophy, but all of them are firmly grounded in observation, and any which cannot be made to accord, in critical features of their implications, with evidence drawn from the material world must be discarded. This feature has some consequences of importance. The first is that, unlike philosophy or religion, science is essentially a "cumulative" discipline, and this quality makes it somewhat unique. Every scientist may feel that his work contributes directly to the work of all his successors—that, because of his labor and his thinking, if it was well done, those who follow will be saved many basic tasks and can cover much more advanced ground. As these successors become more numerous in each generation, the rate of progress of science thus increases almost logarithmically. This is a great advantage, to be sure, but there is an obverse to the pic-

ture. Inevitably, branches of science which were originated and conducted by a single brilliant investigator and a few of his students even a generation ago now require scores or thousands of workers, often coordinated as specialists into relatively large groups, to make any progress at all. Specialization and closely coordinated team work are therefore essential to the continued progress of older branches of science, and the breadth of vision and the individuality of the worker and even his inspirational creativeness are to that extent endangered. Sometimes, indeed, the very mechanical bulk and complexity of such research teams require the association with them of men of scientific training who yet are not true scientists in approach or philosophy, although their skills, like those of the organizers of great systems of philosophy or religion, are often extraordinarily useful. It is not sufficiently recognized, however, even by such workers themselves, that what they are doing is not really science, but only the aiding of science. This lack of distinction is the first danger to science arising out of its very nature.

The second feature of importance is that, precisely because science grounds its thinking so firmly in evidence from the material world, it has ultimately come to understand and to control that world to a remarkable degree. Such control is basically only a byproduct of its real activities, of course, but it is inevitable, when the byproduct is so predominantly important in our lives, that it should overshadow the main purpose of science in our daily thinking. It is a further inevitability that, knowing as we do that science is cumulative and reasoning from the material basis, we should associate our concept of it with great teams of highly coordinated workers turning out material goods to nourish us or to destroy us or to increase our material power without measure. Two wars, in the latter of which particularly scientific effort played a major part in preserving our very freedom of existence, and an intervening period of peace, in which an unparalleled industrial development based on science has brought our nation to the forefront of prosperity and of world power, have firmly fixed this image in our minds. All the data on which the picture is based are true, yet they represent only a small part of the whole truth. It is time, for our own spiritual health and for the good of science, that we reexamine the position.

The United States is primarily an engineering and a business nation.

Both of these activities depend upon a quick and accurate appreciation of the significance and the relationships of facts, and upon their recombination to produce new and desirable results. Both activities are susceptible to mass organization in a high degree, and there is little doubt that we are the world leaders in this field. It is through these activities that our material position has been achieved. This is our tradition and our pride, and justly so. But we must not feel that this is science, though science, as one of its collateral activities, plays an immensely important part in it.

Europe and the Orient, for the most part, have a very different tradition. It is astonishing and somewhat dismaying to reflect how few truly great ideas in science originated in our own country, despite our brilliance in putting such ideas to effective use, once they were pointed out to us. This is partly, I think, a reflection of our youth, partly of our vigor in a new and untried environment, partly of the pressing need for rapid growth that dominated our early history. But, above all, it was due to the fact that scientifically we have always been a colonial nation rather than a true pioneer. If in our early years we were constantly afraid of Europe in a political sense, we were nevertheless her continual protégé in a cultural one. This was as true in the scientific as in any other cultural field. In Europe we had a well nigh inexhaustible store of fundamental scientific ideas and scientific philosophy upon which to draw as fuel for the flame of engineering genius which we early developed. Until this very generation, we felt that the best scientific education to be had was outside of this country, in the great universities of England or the Continent. Until this very generation we put an exceedingly small fraction of our resources into the truly creative part of scientific effort, busy as we were with applying the fundamental knowledge which we were sure we could draw from Europe. We called many things pure science that were actually engineering. And since this engineering was productive of material results of the highest importance to us, it has risen in popularity and support until it is today on the crest of a wave of public approval, and resources are obtainable for its prosecution that have never been available before. This is eminently right and desirable. But we have still failed to distinguish sufficiently between engineering and science.

Infinitely valuable as it was and is, engineering science is comparable with the organizational phase of a religion. Like that phase, it is wholly



*Culture and Power in the Modern World*

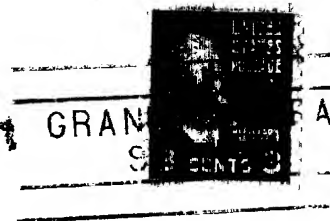
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dependent upon the creative concept of the faith or the system of thought which it organizes and disseminates. So our engineering science has been dependent, to a greater degree than we have cared to recognize, upon the pure science that originated and, to a very large degree continued to flourish, in Europe. But now the intellectual lights of Europe are badly dimmed. It will be long before the pure science of the European continent will approach its stature even of the immediate pre-war years. We must depend upon ourselves to carry forward the spark of creative science, so closely akin to that of philosophy or religion, and to kindle it to a flame in the coming years. And we must do this in a time when the demand for the material benefits of engineering science will be greater than ever before.

Let us guard and foster the name and the practice of science, therefore, with particular vigilance. Let us recognize that the material developments, for good or ill, which science brings are only a byproduct of its activity. However beneficial these results may be, however utterly necessary to us they are, let us remember two things. First, engineering science of any stature is impossible without the development of an adequate base in pure science itself. This is one, but only the meanest reason why we must see to it that the creative, the selfless, the dedicated will of gifted and devoted individual men pioneering in new fields is given every opportunity in the coming years, and must never be denied in competition with the great programs of engineering research. The second and greater reason lies in the whole philosophy of pure science itself—that devoted belief and effort far beyond material reward or thought of power, that activity whose greatest compensation is its own philosophic satisfaction is still as it has been in the past the highest goal of man, and that we, better equipped than any other people in world history to do so, are prepared to recognize it, to honor it, and to give it the fullest scope that lies within our power. If we do this, we can justly feel that our civilization, despite its material prosperity, ranks high among men in spiritual and cultural values, and that, contrary to the accusations which have been brought against us, we have shown that the spiritual and the temporal areas of human activity are fully compatible—that indeed, in large measure, they may be one and the same.

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